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10/734,136	12/15/2003	In-Taek Han	030681-605	9231

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EXAMINER
HINES, ANNE M

ART UNIT	PAPER NUMBER
2879	

NOTIFICATION DATE	DELIVERY MODE
11/02/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

Application No.

10/734,136

Applicant(s)

HAN, IN-TAEK

Examiner

Anne M. Hines

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 13-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13,16,18,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 14,15,17,19 and 22-27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/9/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 10, 2007 has been entered.

Claims 13-27 are pending in the instant application.

### ***Claim Objections***

Claim 15 is objected to because of the following informalities:

Claim 15 is missing a period at the end of the claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun (US 4897319).

Regarding claim 13, Sun discloses an inorganic electroluminescent device comprising a substrate (Fig. 1, 12; Column 3, lines 40-41); a transparent electrode located on one surface of the substrate (Fig. 1, 14; Column 3, line 42); an inorganic light-emitting layer located on a side of the electrode opposite to the substrate (Fig. 1, 20; Column 3, lines 47-49); a dielectric layer

Art Unit: 2879

located on a side of the inorganic light emitting layer opposite to the electrode (Fig. 1, 22; Column 3, lines 49-54); an electron field emission enhancing layer, located on a side of the dielectric layer opposite to the inorganic light emitting layer, that enhances emission of electrons located at an interface between the dielectric layer and the inorganic light emitting layer (Fig. 1, 24; Column 3, lines 49-54; Column 2, lines 29-37; Column 2, lines 50-68); and a back electrode located on a side of electric field emission enhancing layer opposite to the dielectric layer (Fig. 1, 26; Column 3, lines 58-60).

Regarding claim 16, Sun discloses an inorganic electroluminescent device comprising a first electrode (Fig. 1, 14; Column 3, line 42); a first dielectric layer adjacent to the first electrode (Fig. 1, 18; Column 3, line 45); an inorganic light-emitting layer adjacent to the first dielectric layer (Fig. 1, 20; Column 3, lines 47-49); a second dielectric layer adjacent to the inorganic light-emitting layer (Fig. 1, 22; Column 3, lines 49-54); a second electrode adjacent the second dielectric layer (Fig. 1, 26; Column 3, lines 58-60), wherein the first electrode, first dielectric layer, the inorganic light-emitting layer, the second dielectric layer, and the second electrode form a layered structure (Fig. 1); wherein the layered structure includes an electron field emission enhancing layer for enhancing emission of electrons located at an interface between an electrode and a dielectric layer located at at least one location selected from the list of a location between the first electrode and the first dielectric layer, and a location between the second electrode and the second dielectric layer (Fig. 1, 24; Column 3, lines 49-54; Column 2, lines 29-37; Column 2, lines 50-68).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2879

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (US 4897319).

Regarding claim 18, Sun teaches an inorganic electroluminescent device comprising a first substrate (Fig. 1, 12; Column 3, lines 40-41); a transparent electrode located on the first substrate (Fig. 1, 14; Column 3, line 42); an inorganic light-emitting layer located on the transparent layer (Fig. 1, 20; Column 3, lines 47-49); a dielectric layer located on the light-emitting layer (Fig. 1, 22; Column 3, lines 49-54); an electron field emission enhancing layer, located on the dielectric layer, that enhances emission of electrons located at an interface of the back electrode and the dielectric layer (Fig. 1, 24; Column 3, lines 49-54; Column 2, lines 29-37; Column 2, lines 50-68), and a back electrode located on the light emitting layer (Fig. 1, 26; Column 3, lines 58-60). Sun fails to disclose a second electrode opposite the first electrode.

However, one of ordinary skill in the art would reasonably contemplate modifying the invention of Sun to have a second electrode opposite the first electrode and on the back electrode in order to protect the device from environmental hazards such as water moisture or mechanical damage.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Sun to have a second substrate opposite to the first substrate and on the back electrode in order to protect the device from environmental hazards such as water moisture or mechanical damage.

Regarding claim 20, Sun teaches an inorganic electroluminescent device comprising a first substrate (Fig. 1, 12; Column 3, lines 40-41); a transparent electrode located adjacent the first substrate (Fig. 1, 14; Column 3, line 42); a first electron field emission enhancing layer,

Art Unit: 2879

located adjacent the transparent electrode, that enhances emission of electrons located at an interface between the transparent electrode and a first dielectric layer (Fig. 1, 16; Column 3, line 43; Column 2, lines 29-37; Column 2, lines 50-68); the first dielectric layer located adjacent the transparent electrode (Fig. 1, 18; Column 3, line 45; Column 2, lines 29-37; Column 2, lines 50-68); an inorganic light-emitting layer located adjacent to the first dielectric layer (Fig. 1, 20; Column 3, lines 47-49); a second electron field emission enhancing layer located adjacent the inorganic light-emitting layer, that enhances emission of electrons located at an interface between the inorganic light-emitting layer and a back electrode (Fig. 1, 22; Column 3, lines 49-54; Column 2, lines 29-37; Column 2, lines 50-68); the back electrode located adjacent the second electron field emission enhancing layer (Fig. 1, 26; Column 3, lines 58-60); and a second dielectric layer located adjacent the back electrode (Fig. 1, 24; Column 3, lines 52-54; Column 2, lines 29-37; Column 2, lines 50-68). Sun fails to disclose a second electrode opposite the first electrode.

However, one of ordinary skill in the art would reasonably contemplate modifying the invention of Sun to have a second electrode opposite the first electrode and on the back electrode in order to protect the device from environmental hazards such as water moisture or mechanical damage.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Sun to have a second substrate opposite to the first substrate and on the back electrode in order to protect the device from environmental hazards such as water moisture or mechanical damage.

Regarding claim 21, here the Applicant is claiming the product of an inorganic electroluminescent layer including a method (i.e. a process) of making the inorganic electroluminescent layer, consequently, claim 21 considered "product-by-process" claim. In

Art Unit: 2879

spite of the fact that the product-by-process claim may recite only process limitations, it is the product and not the recited process that is covered by the claim. Further, patentability of a claim to a product does not rest merely on the difference in the method by which the product is made. Rather, it is the product itself that must be new and not obvious (see MPEP 2113). Accordingly, the inorganic electroluminescent layer of Sun is considered to meet the structural limitations claimed.

#### ***Allowable Subject Matter***

Claims 14-15, 17, 19, and 22-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 14, 17, 19, 22, and 23, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claims 14, 17, 19, 22, and 23, and specifically comprising the limitation of the electron field emission enhancing layer includes carbon nanotubes.

Claims 15 and 24-27, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claims 15 and 24-27, and specifically comprising the limitation of the electron field emission enhancing layer includes nanoparticles.

#### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2879

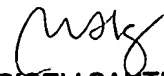
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne M. Hines whose telephone number is (571) 272-2285. The examiner can normally be reached on Monday through Friday from 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Patent Examiner  
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